

Materials Science and Technology Division

personal profile

Betts explores new horizons at magnet laboratory

Jonathan Betts could be considered a jack-of-all-trades. The English native has gone from wiring thermometers for a small company in his home country to writing scientific articles as a technician working at Los Alamos' National High Magnetic Field Laboratory (MST-NHML).

It's not a career path Betts envisioned for himself when, at the age of 17 and bored with academics, he left school—making what would hardly seem a career move considering England in the late 1970s was gripped by a huge depression.

Although disinclined to apply himself in the classroom, Betts was interested in physics and engineering and often worked on electrical projects with his father, a telecommunications engineer. "I was the classic take it apart and never put it together again kid," he said.

An ad in a local paper prompted the young Betts to apply for an apprenticeship with Oxford Instruments, then a small cryogenic company specializing in instrumentation manufacturing and support. He earned a paycheck and received a paid technical college education, enabling him to become a cryogenics equipment expert.

"It was awesome," Betts said of the experience. "It felt like I had fallen on my feet into something I could see as a career, not just a job."

Betts said he enjoyed the tight-knit company's family atmosphere and the opportunity to travel "on a phenomenal expense account" that took him to Japan, Korea, and across Europe. He eventually became the go-to-guy when it came to problematic installations and support issues involving cryogenics and dilution refrigerators.

In 1987 he and his family relocated to the Boston area, where he became a service manager and traveled throughout the United States. In the process he made connections in academia and industry that would eventually bring him to Los Alamos.

A successful, but stressful, stint in the sales department of Oxford Instruments, now a vast global corporation, convinced Betts it was time for a change. Industry, he said, "was all about the product and product had to be sold" in order for an employee to earn a salary. As a result, "You didn't have time to do things that might not quite pay out, to test ideas, or bounce ideas off people."

In 1997 when he was offered the chance to work at Los Alamos along with the opportunity to "do something with the equipment, not just install it," Betts said, he and his family headed west.



Albert Migliori (left) and Jonathan Betts examine a sample container in preparation for a study of phase transition in nanomagnetic particles at Los Alamos' National High Magnetic Field Laboratory.

Expanding possibilities

Despite Betts' lack of a classical physics education and doctorate degree, when he arrived at the magnet laboratory he was far from intimidated by the scholar-scientists around him. In fact, he already knew many of the best-known names in the field due to his years of working with them in industry. And in return, Betts' reputation preceded him.

"Wherever they come from—France, the United Kingdom, Brazil—they know about Betts," said NHMFL Center Leader Alex Lacerda, who first met Betts in 1993 when he arrived to install the magnet laboratory's first dilution refrigerator. Betts' skill, dedication, and independence make him "one of the most talented technicians I have ever worked with," Lacerda said.

Eager to expand on his hands-on, technical education, Betts developed a mentoring relationship with Laboratory Fellow and condensed matter physics expert Albert Migliori. "One thing that has made Los Alamos such an awesome experience is that Albert is my complete mentor," Betts said. "He has taught me so much in the last eight years."

In particular, the two, who both enjoy tinkering with all things mechanical, have collaborated on solving the mysteries of plutonium.

According to Betts, the popular misunderstanding among scientists is that "plutonium is not worth studying because it's been around a while and surely everything has already been done," he said. "But you start delving into it and you discover it has not

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been done...The thing that attracts me, with my limited physics knowledge, is that I can dream up things that seem plausible from a physics standpoint and take data that should have been taken 50 years ago, but wasn't."

Those who know him say this practical, take-action demeanor is characteristic of Betts. Migliori described a day when he walked into the lab and Betts had the "ultrasound system running with plutonium, a set of thermometers calibrated, and a specific heat system rebuilt for the fifth time with changes. I came in and asked 'What's happening?' and he replied "Not a [heck] of a lot."

Although Betts said he regrets not getting a classical education, he admitted he probably wouldn't change the path he has taken. "There are world-class scientists here and they are so down to earth," he said. "I can ask anyone a stupid question and they give me the time of day."

Relying on expertise

That informal and unprejudiced environment is commonplace at the magnet lab, according to Betts. It is a product of the center's leadership, which allows employees the freedom to do their research, and the user facility's diverse workforce, a mixture of staff, users, and postdoctoral students from around the globe.

"Being here you get to learn how other people conduct their lives and their work," Betts said. The result is not only a diversity of culture, but also a diversity of techniques, where experts in

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NHMFL Center Leader
Alex Lacerda



Jonathan Betts

Betts' favorite experiment

What: "Between me and Al (Migliori), we have a list as long as both our arms and they are prioritized," Betts said. In particular, there are two he especially wants to complete, but is cagey about discussing them, not wanting to reveal the concepts.

When: "In the next ten years before I retire."

Where: LANL, of course.

different fields are keen to share their knowledge. "You would be hard pressed to come to the magnet lab and want to take from someone," he said. "We don't try to learn each other's expertise, but rather we rely on it."

Just as others rely on Betts' unique talents.

Not only is he the authority on solving low-temperature-related technical problems, Betts, with his quiet and competent manner, has a way of diffusing vexing situations. "He has such tremendous experience in industry that he doesn't have time to spare," Lacerda said. As a result, "he's really good at cutting right to the core of an issue and saying 'Let's just do this and stop complaining'... His presence and the way he does business just improves the whole environment."

Just another skill to add to Betts' wide-ranging resume. Betts lives in Santa Fe with his wife, Sue.

—By Karen E. Kippen
MST Communications